What is claimed is:

1. A prosthesis for implantation in a patient, comprising:

(a) a prosthesis body comprising a substrate material, said prosthesis body comprising an implant portion for inserting into the body tissue of the patient;

(b) a bearing surface on the prosthesis body comprised of an abrasion resistant surface; and,

(c) a counter-bearing surface comprising cross-linked polyethylene and adapted to cooperate with the bearing surface.

2. The prosthesis of claim 1 wherein the implant portion of the prosthesis body further comprises an irregular surface structure adapted to accommodate tissue in-growth on a portion of the prosthesis body.

3. The prosthesis of claim 2 wherein the irregular surface structure comprises beads attached to the outer surface of the prosthesis body, wherein at least a portion of the surface of the beads is oxidized to blue-black or black oxidized zirconium.

4. The prosthesis of claim 2 wherein the irregular surface structure comprises wire mesh connected to the outer surface of the prosthesis body, wherein at least a portion of the surface of the mesh is oxidized to blue-black or black oxidized zirconium.

5. The prosthesis of claim 1 wherein the prosthesis body further comprises at least one substrate layer.

6. The prosthesis of claim 1 wherein the prosthesis body further comprises at least one substrate layer having a depth-dependent variable concentration of zirconium.

7. A vertebral disc prosthesis for implantation in a patient, said prosthesis comprising

at least one surface of cross-linked polyethylene; and,

at least one component formed of zirconium or zirconium alloy and having at least one surface of blue-black or black oxidized zirconium,

wherein said at least one surface of cross-linked polyethylene cooperates with said at least one surface of blue-black or black oxidized zirconium.

8. The vertebral disc prosthesis of claim 7 further comprising:

two prosthesis plates; and,

a prosthesis core

said prosthesis core cooperates with at least one prosthesis plate at surface permitting a rotational movement around a vertical axis.

9. The vertebral disc prosthesis of claim 7 wherein said surface of blue-black or black oxidized zirconium is from about 1 to 20 microns thick.

10. The vertebral disc prosthesis of claim 7 wherein said surface of blue-black or black oxidized zirconium is from about 1 to 5 microns thick.

11. The vertebral disc prosthesis of claim 7 wherein said at least one component comprises an irregular surface structure adapted to accommodate tissue in-growth on a portion of the prosthesis body.

12. The vertebral disc prosthesis of claim 11 wherein the irregular surface structure comprises beads attached to the outer surface of the prosthesis body, wherein at least a portion of the surface of the beads is oxidized to blue-black or black oxidized zirconium.

13. The vertebral disc prosthesis of claim 11 wherein the irregular surface structure comprises wire mesh connected to the outer surface of the prosthesis body, wherein at least a portion of the surface of the mesh is oxidized to blue-black or black oxidized zirconium.

14. The vertebral disc prosthesis of claim 11 wherein the irregular surface structure comprises a textured surface.

15. The vertebral disc prosthesis of claim 11 wherein the irregular surface structure comprises anchoring projections or teeth.